

### Letters to the Editor.

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#### Name for the Positive Nucleus.

A NAME is wanted for the fundamental unit of matter, which is also the unit of positive electricity as at present known. The name "electron" is best limited to the unit of negative electricity, about which a good deal is by this time known. Less is known about the positive unit, but it appears to be the brick of which all atoms are built up, electrons acting as cement. Nearly all the mass belongs to the positive unit, and the simplest atom—namely, hydrogen—appears to consist of one positive and one negative unit electric charge. The heaviest atom known has ninety-two such charges, and among the chemical elements are all intermediate grades. Prout's famous hypothesis that every element was a multiple of hydrogen is thus, with some modification, being confirmed, though the unnamed unit is not exactly an atom of hydrogen, but the nucleus, the main substance, of that atom.

At the Cardiff meeting of the British Association Sir Ernest Rutherford suggested, or tentatively approved the suggestion, that the name "proton" should be applied to this hydrogen nucleus or unit of positive charge. To call it a positive electron is undesirable—that name might be assuming too much—for it is just conceivable that the progress of discovery may detach from the proton a positive charge more closely akin to the negative electron—in fact an image of it. (It is not clear why a positive unit should differ so markedly, as at present it does, from the negative unit.) But, whatever the proton's relation to positive electricity, and whatever its constitution may be, it seems undeniable that it is the most essential and massive ingredient in every atom of matter.

From the scientific point of view the name "proton" is therefore good, for it signifies a fundamental substance and conveys a suggestion of Prout. But from the literary point of view there may be some objection, and a name for the foundation-stone of the material universe ought to be capable of being used in poetry, as the word "atom" has been used. It would seem well, therefore, to ask for suggestions before any name is adopted and allowed to get into general use.

*Added Later.*—Before sending in the above explanatory note I consulted some men of letters, who will, I hope, allow their names to be mentioned, and who have made some excellent suggestions:

AMBRON, as an English version of *electron*, suited to the unit of positive electricity.

MERRON, a conventional modification of *μέρος*.

UR-ON, or something based on the root Ur-; or even Ur itself.

PRIME, as a primordial substance irresolvable into factors.

CENTRON, as a nucleus round which things revolve.

HYLON, as the fundamental unit of matter.

Of these I personally prefer *Hylon*; it serves to convey a fact with a minimum of hypothesis; it is itself a convenient word, and it surely need not be regarded

as too metaphysical. If its first syllable suggests a real, but painfully illegitimate, relationship to hydrogen, that may be for it or against it, according to taste. I find the word "proton" is not liked; it has been described as "used up and very dull." Wrong pronunciation may be hostile to "Ur," and, besides, it might be confused with the other end of the series (uranium), though otherwise it shares some of the advantages of the happily invented word "gas."

OLIVER LODGE.

#### The British Association.

THE correspondence in *NATURE* under this heading has been most instructive. The widely spread feeling that the Association fails as an organisation, to promote the growth of the scientific spirit could not well be more definitely brought to light, particularly as many who are known to hold strong views have refrained from expressing them; unfortunately, moral indecision is fast becoming a characteristic of our class. It is all very well for the late secretary and the present holders of the office to hint that the recommendations cancel out; maybe they are different; nevertheless, excepting our dear old member, Father Cortie, who has the sense of humour on all occasions, everyone agrees that the Association does not touch the public.

The most serious contribution to the discussion, that of greatest import, is the frank statement by the secretary of the Press and Publicity Subcommittee at Cardiff—for once a man who dares to give open expression to the views he has formed—that we were in no way worth what we cost the locality; he has voiced a whisper, not seldom heard at previous meetings, which has long weighed on the conscience of some members of the Association.

The least satisfactory letter is that of the two secretaries, who are merely apologetic, in no way constructive. The manner in which, in their opening paragraph, they quietly imply that they are "It" would be amusing were the issue not so serious. Majestically they tell us to send *them* our views and that *they* will consider them. No doubt—and consign them to the waste-paper basket, as of yore.

Even outsiders see that science is losing its influence. Dean Inge, in one of his recent outspoken addresses, pointed out that "a general revolt against the dictatorship of science had been the most remarkable tendency in modern thought. In politics the anti-scientific temper was rampant. The revolution which more than a hundred years ago guillotined Lavoisier, 'having no need of chemists,' was now proclaiming that it had no need of intellectuals of any kind. In Russia they had been tortured and massacred; in our own country they were ignored and despised."

Ephemeral writers such as Mr. G. K. Chesterton openly scoff at us and lead the public to believe that evolution is a theory of the past and eugenic doctrine moonshine. Their word is accepted, ours is not; the clown is ever popular, the comic actor always preferred to the tragic; if we will assume only the prophet's mantle we must expect to be stoned.

It is useless for Sir Ray Lankester to take such men across his knee and thwack them in his best grandfatherly style. The literary braggadocio is only to be silenced by showing him up as ridiculous; he is but playing a part—writing nonsense because it pays; it is his trade and we must not blame him but blame the school in which the class is bred and has its being. We are too conceitedly serious, hopelessly narrow in our outlook, too self-centred to be alive to public

needs—so individualised and so hopelessly jealous among ourselves that we will not co-operate and organise our forces. Nothing could show this more clearly than the way in which the Royal Society has sacrificed its opportunities during the war period by failing to bring all its fellows together and thus make our corporate influence felt. Little wonder that science is being more and more excluded. We are talking of government by public opinion but real opinion cannot be made public. The columns of the Press are not open to any serious discussion from our side; the books we write are not understood even by ourselves. Owing to excessive specialisation we are becoming less and less able to express and protect ourselves, less interested in stating our case in any broad way; what is worse, too selfishly immersed each in his own narrow occupation to consider the general interest: and we be not careful the position won for us by the protagonists of the past will soon be lost to us.

Our failure is as window-dressers; we have not displayed our goods in the right manner. When a business is a failure, the only way to re-establish it is to reconstruct the management. That we have yet to learn this elementary truth is clear, however, from the recent appointment to the treasurership. A young man should have been found for the office, gifted not only with scientific experience but also with some breadth of outlook, some understanding of men and affairs; instead, a senior member of the Association has been chosen.

If a senior were desirable, no better choice could have been made; but I believe my old friend Principal Griffiths will not mind my saying that he is saved from inclusion in my class of elderly amiables only by the fact that throughout the war he was conspicuously active in his efforts to bring the value of scientific method before the public; he is far too soft-hearted to face the exigencies of the present situation.

The council must cease to be all but entirely an old or even an elderly man's show; responsibility must be forced upon the younger generation of active workers.

The secretaries obviously have no policy; new men must be chosen at the earliest possible date—I trust on the three years' hire system advocated in my former letter, so that the different subjects may be cared for at shorter intervals.

The real question at issue is: "How are we to get at the public?" To do this we must look beyond the meetings and in some way arrange for the preparation and issue each year of a few authoritative tracts dealing with bedrock problems in language that can be understood by all. Subjects can easily be found; under E alone enough are to hand—*Economics, Education, Energy, Entomology, Eugenics, Evolution*. Nobody believes in these, few know what the terms comprise, yet the future of our race depends on an intimate understanding and application of the doctrines they cover. A great work would be done by the Association if only, by real discussion not the dreamy, introspective twaddle of Section L, the nonsense now spoken of as education were reduced to terms of wisdom.

HENRY E. ARMSTRONG.

### The Constitution of the Elements.

SINCE my last letter under the above title in NATURE of July 1, experiments have been made with a few more elements. The work has been progressively more and more difficult, for it has not been easy to find volatile compounds suitable for use, and when

found the very objectionable chemical properties of some of them have led to experimental trouble and disappointing results. Thus selenium, tin, antimony, and tellurium have so far yielded no result of any value.

Fortunately, iodine (atomic weight 126.92) gave definite and unmistakable effects. It proves to be a simple element of mass 127—a result satisfactorily confirmed by a single line at 142 corresponding to  $\text{CH}_3\text{I}$ , the vapour used in the experiments. This result has particular interest in view of the recent work of Kohlweiler (*Zeit. Phys. Chem.*, vol. xcv., 1920, p. 95), who deduces five isotopes of iodine, all of even integral atomic weights, and claims to have effected a considerable separation of these by diffusion.

Owing to the kindness of Prof. Collie and Dr. Masson in providing me with a sample of gas rich in xenon, I have been able to identify two more probable isotopes of that element and obtain trustworthy values for the atomic weights of the five already found. The provisional figures given for these turn out to be too low. The values quoted below were obtained from the position of the second-order line 64.5. They should be trustworthy to about one-fifth of a unit.

Additional evidence on argon leads to the conclusion that its isotope 36 need no longer be regarded as doubtful.

The following table gives the results to date:

Table of Elements and Isotopes.

| Element | Atomic number | Atomic weight | Minimum number of isotopes | Masses of isotopes in order of their intensity |
|---------|---------------|---------------|----------------------------|------------------------------------------------|
| H       | 1             | 1.008         | 1                          | 1.008                                          |
| He      | 2             | 3.99          | 1                          | 4                                              |
| B       | 5             | 10.90         | 2                          | 11, 10                                         |
| C       | 6             | 12.00         | 1                          | 12                                             |
| N       | 7             | 14.01         | 1                          | 14                                             |
| O       | 8             | 16.00         | 1                          | 16                                             |
| F       | 9             | 19.00         | 1                          | 19                                             |
| Ne      | 10            | 20.20         | 2                          | 20, 22, (21)                                   |
| Si      | 14            | 28.30         | 2                          | 28, 29, (30)                                   |
| P       | 15            | 31.04         | 1                          | 31                                             |
| S       | 16            | 32.06         | 1                          | 32                                             |
| Cl      | 17            | 35.46         | 2                          | 35, 37, (39)                                   |
| A       | 18            | 39.88         | 2                          | 40, 36                                         |
| As      | 33            | 74.96         | 1                          | 75                                             |
| Br      | 35            | 79.92         | 2                          | 79, 81                                         |
| Kr      | 36            | 82.92         | 6                          | 84, 86, 82, 83, 80, 78                         |
| I       | 53            | 126.92        | 1                          | 127                                            |
| X       | 54            | 130.32        | 5, (7)                     | 129, 132, 131, 134, 136, (128, 130?)           |
| Hg      | 80            | 200.60        | (6)                        | (197-200), 202, 204                            |

(Numbers in brackets are provisional only.)

F. W. ASTON.

Cavendish Laboratory, November 30.

### Solar Variation and the Weather.

IN NATURE of July 29 last (p. 678) appears an article by Dr. C. G. Abbot on solar variation and the weather, in which reference is made to the use of solar data by the Argentine Weather Service. Drs. Nansen and Helland-Hansen have also found some interesting correlations between the variations of solar radiation as measured by Dr. Abbot and variations of temperature and pressure in Norway.

As other investigators will no doubt be tempted into this field, I feel that it may be of interest to give briefly a summary of our latest results and conclusions. These conclusions are based on the study of an immense amount of data from various parts of